Two new Trendmaster® 2000 seismic transducer mounting systems

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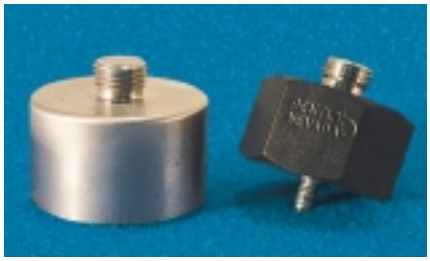
When a thorough application review has confirmed that seismic transducers provide an acceptable measurement for the machinery in question (see sidebar), the Bently Nevada Quick-Set and Mag-Force mounting systems provide alternative ways to mount seismic transducers that measure casing vibration over the 10 Hz to 2000 Hz frequency range. These new attachment methods are easier to implement than conventional stud mounting and are stronger than most adhesive mountings.

Conventional stud mounting is the preferred method from a performance standpoint, but is not always feasible due to either economic or logistical considerations.

The Quick-Set system uses a low torque, self-tapping screw that is screwed into a #26 pilot hole drilled in the machine casing. The Quick-Set has a 3/8-24 stud to attach the transducer. This approach is usually easier than drilling and tapping the machine to accept a threaded stud.

The Mag-Force system uses a powerful magnet and a durable industrial-strength adhesive. The combination of the magnet and adhesive provides a more durable installation than either one alone. Since it isn't necessary to drill a hole in the machine, the cost of approvals and documentation may also decrease.



The Mag-Force and Quick-Set mounting systems.

Compatible transducers

These mounting systems can be used with the following Bently Nevada Trendmaster 2000 transducers:

200150 Accelerometer

190520 Accelerometer

190501 Velomitor® CT

For more information, contact your nearest Bently Nevada sales professional. For a current copy of the data sheet, visit our website – www.bently.com – or check the appropriate box on the enclosed Reader Service Card.

Back To Basics

Using the right transducer for the right measurement

For years, Bently Nevada has advocated the right measurement for the task at hand. That's why we provide displacement, velocity, and acceleration transducers – because all three have a legitimate role in protecting and managing your machinery. We provide the highest quality products for each of these measurements. We continually strive to lower the total installed cost, while increasing the dependability of our products, by looking for innovative ways to install them. The new seismic products introduced in this article are good examples of this. However, we want to ensure that our products are used and applied properly. So even though we are making it less costly to install our seismic transducers, we still want to make sure our customers select and use these transducers correctly.

In particular, seismic transducers are often used to assess the condition of rolling element bearings. Depending on the machine design, however, it is not always correct to assume that significant vibration will be faithfully transmitted to the bear-

ing housing or machine case, *even when rolling element bearings are used.*

When your primary interest is with vibration occurring in the rolling element bearing or at the rotor, this vibration originates *inside* the machine. Therefore, both the amplitude and phase of the various frequency components that constitute the complex vibration signal must be preserved as they travel through the machine structure to its casing. This vibration is modified in several ways: the amplitude is attenuated as a function of frequency and other physical variables, the phase of the frequency components are shifted depending on the amount of damping in the transmission path, and the modal response of the case may amplify or attenuate the vibration measured by the transducer. Decisions, based on this potentially distorted data, may be incorrect. Transducer placement becomes extremely important, since the transducer is only able to measure the response at a single location on the casing. In addition, the casing vibration may contain signal content of significant amplitudes that is neither bearing- nor rotor-related, such as blade or impeller passing frequencies, piping vibration, or flow turbulence, etc. This can make it extremely difficult to separate bearing- and rotor-related signal content from other signal content.

When bearing- and rotor-related information is your primary goal, our REBAM® technology represents a better choice (see the case history on page 7 for an example of this and the sidebar on page 9 for a description of REBAM), as it overcomes all of these difficulties. When considering the use of a seismic transducer, identify not only if a significant portion of the shaft and bearing vibration will be faithfully transmitted to the machine casing at the measurement location, but also determine what you are really interested in: bearing-related activity? Rotor-related activity? Casing vibration not originating with the rotor or bearing? The answers to these questions will help determine the correct transducer for the job at hand.

Finally, special care must be exercised for applications where the transducer will be used as part of a machinery protection system that provides machinery shutdown capability. Seismic transducers, when misapplied, can miss or mask important machinery data and result in missed trips or false trips. Why not ask for assistance in this important task of transducer selection? As always, Bently Nevada can provide the engineering applications expertise to help you select and install the correct transducer.

ANNOUNCEMENTS

ASME TURBO EXPO LAND, SEA & AIR '99

Don Bently to receive ASME award

The American Society of Mechanical Engineers (ASME) recently selected Donald E. Bently, founder, Chairman, and CEO of Bently Nevada Corporation, to receive the 1999 R. Tom Sawyer Award. He was chosen for his "advancements in developing primary instrumentation and diagnostic tools, which have resulted in the advancement of gas turbine engine development and its continued successful operation."

This significant award recognizes Mr. Bently's pioneering role in developing and advocating the use of shaft-observing proximity probes in many types of turbomachinery. Prior to the early 1960's, gas turbines were often monitored solely with casing vibration transducers. Today, thanks to his efforts, proximity probes are universally accepted as a superior method of monitoring virtually all machinery, not just gas turbines, for protection and machinery management.

Formal presentation of the award, which consists of a $1000 honorarium, plaque, and certificate, will be made during the ASME TURBO EXPO `99, Exposition and Users Symposium. It will be held in Indianapolis, Indiana from 7 to 10 June 1999. If you attend the Expo, stop by our booth - #728.

ASME Gas Turbine Users Symposium

Roger Harker, Bently Nevada's President and Chief Operating Officer, will be serving as Users Symposium Chairman of the ASME Gas Turbine Users Symposium (GTUS). The GTUS is part of the annual ASME TURBO EXPO `99, the main symposium for the international gas turbine community. It will be held in Indianapolis, Indiana, USA from 7 to 10 June 1999. We invite you to join the discussions and stop by our booth - #728.